the absence of distinctive bedside manifestations in the catarrhal stage clinicians naturally turned to the laboratory for assistance and to bacteriology particularly did they look for interesting revelations of a practical nature similar to those brought forward as a result of researches on tuberculosis, diphtheria, and other specific infectious diseases. The earlier investigations along these lines by Spengler, Jochmann and Krause, and others were interesting but inconclusive; on the other hand the work of Berdet and Gengou published in 1906 is more significant but as will be seen has not yet yielded results which may readily and easily be applied to ordinary practical medicine. As is well known these observers found a short, oval, Gram-negative bacillus in the bronchial exudate from early as well as late cases of pertussis. They were able to cultivate the organism on a special medium consisting of 1 per cent glycerin agar or broth made with macerated potato and added to an equal volume of human or rabbit blood. Cover-slip examinations are, however, so unreliable and the cultural verification necessitates so much purely technical manipulation that it is very questionable if these results of their study will be utilized under ordinary circumstances. Another course suggested by the research of Bodet and Gengou lies in the use of serum reactions for they have shown that the serum of convalescents from pertussis contains substances but this deviation of complement reaction likewise presents difficulties not easily overcome by the clinician although we hope that municipal laboratories will in the near future make their services available to the practitioner for diseases the diagnosis of which involves procedures of this kind.

Although the bacteriological criterion should and will eventually be employed in routine work for the early diagnosis of pertussis it is obvious that the majority of practitioners will look for this purpose to some more facile even if not so accurate a method. It is therefore likely that most of them will follow with greater interest the results of ordinary morphological blood examinations in their diagnostic applications to this disease. It is interesting that more than ten years ago Frohlich called attention to certain changes in the blood which are now the subject of more extended study in this connection. These alterations in the cellular content of the blood have also been investigated by De Amici and Pacchioni, Muggia and Bertoletti Crombie, and more recently by two American observers, Barach (Arch. of Internal Medicine, July 15, 1908) and Kelmer (Ibid. July 15, 1909).

From a review of their work it is evident that there is a slight leucocytosis and an absolute increased percentage of all the forms in the catarrhal stage and, indeed, to some extent, according to Kelmer, even in the precatarrhal period. The number of leucocytes steadily increases in the catarrhal stage reaching the climax in the paroxysmal, after which they gradually fall in number until the normal is attained. The lymphocytosis upon which emphasis is laid begins very early but only becomes decided in the catarrhal phase and marked in the paroxysmal stage, after which a decline is noted. The increased percentage of lymphocytes is absolute and not simply relative as is frequently found in rickets. The percentage of polymorphonuclears is in most instances actually increased but relatively they decrease as the lymphocytes go up while the eosinophiles which are usually present in normal proportions in the catarrhal period show a relative decrease in the paroxysmal after which time a mild eosinophilia sets in.

It would therefore seem that in the presence of a mild catarrhal bronchitis associated with a leucocytosis and lymphocytosis with decreasing polymorphonuclears and rising lymphocytes we may reasonably suspect if not actually diagnose pertussis. While the number of investigations covering these points is yet small it is noteworthy that all observers arrived at the same general conclusions.

THE EXTENT OF SQUIRREL PLAGUE.

Last month the JOURNAL commented upon the prevalence of plague among the ground squirrels of Contra Costa and Alameda Counties and the efforts which were being made by Dr. W. C. Rucker, of the Public Health and Marine Hospital Service, and his small corps of assistants to eradicate it. Practically all parts of this territory are infected and work has just been started in Stanislaus and San Benito Counties, where a number of plague squirrels have already been reported. About one per cent of all squirrels examined at the laboratory are infected. Dr. McCoy, who has charge of this work, believes that the disease has existed in these regions for a long period. It is problematical just how far down the coast the infection extends, although it may be added that plague squirrels have been found in all counties in which an extensive search has been made. The eradication of the disease presents one of the most serious problems which has thus far engaged the attention of our sanitary officers.